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AUTHOR Allbritten, Bill
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ABSTRACT

Attrition, which averages 40 percent among college freshmen, has been associated with academic skills, career decision making, psychological characteristics, and institutional climate. To determine the self-perceived developmental characteristics of college freshmen and the relationship of those characteristics to retention and grade point average (GPA), 592 college students (50 percent of the freshmen class enrolled in orientation classes, 251 males, 346 females) completed the Student Developmental Task Inventory (SDTI). Tests were administered in the fall semester and students were tracked for three semesters for retention and GPA data. An analysis of the results showed significant sex differences on the scales of the SDTI, with women viewing themselves as less mature than men in emotional and behavioral autonomy. However, they viewed themselves as more mature than men in interpersonal relationships. Men perceived themselves as having more definite career plans than women, although women perceived themselves as having higher long range life plans than men. The data did not yield significant differences along sex-based variables insofar as association of the SDTI scales, sex of the student, retention, and GPA were concerned. For both GPA and retention, the SDTI was able to predict only group behavior. Life plans, career plans, and peer relationships contributed most to the prediction of GPA, while educational plans, career plans, tolerance, and life plans contributed most to the prediction of retention.

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AN EXAMINATION OF THE RELATIONSHIP BETWEEN
RETENTION, GRADE POINT AVERAGE, AND DEVELOPMENTAL
CHARACTERISTICS OF COLLEGE FRESHMEN

Presented by
Bill Allbritten, Ph.D.

Counseling and Testing Center
Murray State University
Murray, Kentucky

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INTRODUCTION

The task of meeting developmental needs of students has long been a primary concern of college student personnel workers. New urgency has been given to this endeavor as the importance of retention, or in other words, reduction of attrition, of students has increased. Astin(1975) noted that approximately forty per cent of entering freshmen do not complete a baccalaureate degree. This finding identifies a phenomenon that is significant from both a realistic and philosophical standpoint to college and university administrators. The expenditure of resources on non-completing students is substantial. The frustration and negative effect on self-image to the non-retained student requires intervention. This study will attempt to identify developmental variables that had significant effect upon performance and retention of entering students at a regional, state-supported university. This study was conducted as part of an institutional effort to identify student characteristics that are related to persistence in pursuing an academic program.

RELATED RESEARCH

Johnson (1970), using the Minnesota Counseling Inventory, found that college persistence was significantly related to persistence, conformity, and family relationship scales of the instrument. Rossmann and Kirk (1970) found that persisters in college had higher verbal SAT scores than withdrawals and that withdrawals were more likely to be reflective, abstract in their thinking, and artistic than their persisting counterparts. Persisters were found to be more conventional and pragmatic than withdrawing students. Robinson (1969) found that students who voluntarily withdrew rather than being dropped were more likely to be satisfied with social activities, counseling services, and student services in general than students who were dropped for academic reasons. Newlon and Gaither (1980) found that attrition was related to choice of major, that is, career and vocational fields experienced less attrition than humanities and fine arts. Their findings indicated that those areas least able to afford attrition were experiencing the greatest problem with attrition. Newlon and Gaither concluded that studies relating attrition to choice of major are most efficacious as predictive rather than preventative tools.

Kohen, Nestel, and Karmas (1978), in a study of persistence during the 1960's, found that positive relationships existed between mental ability (IQ) and persistence, but found that high school curricular content was a relatively poor predictor of persistence beyond the freshman year. Indeed, the researchers found no significant net relationships between characteristics of a demographic nature, such as parental income, race, sex, age, and marital status, and persistence. Steele (1978), in a study at the University of Miami, found that the major correlates of retention involved the perception of students of their progress towards academic and career goals. He also concluded that lack of clearly defined or inappropriate goals were possible causes of dissatisfaction. He recommended that institutions pay particular attention towards policy that affects academic goal setting.

A nationwide survey, entitled, "What Works in Student Retention" (Van Beek, Noel, Buntrock, 1980) provided information suggesting that inadequate academic advisement and lack of "fit" in a choice of college are the two most significant factors having impact on attrition at the surveyed institutions. Aitken (1982) has devised a mathematical model, based on multiple regression, that defines retention in terms of academic satisfaction, living satisfaction, and academic

performance. His model, while an initial effort to quantify variables related to retention, does provide a scientific basis for examining retention.

PURPOSE OF THE STUDY

This study was conducted as part of an overall examination of retention characteristics of students at a regional, state funded comprehensive university. Priorities were placed in the retention analysis to determine self-perceived developmental characteristics of freshmen and to determine the relationship between these characteristics to retention and grade point average (GPA) performance. The study is descriptive in nature and attempts to identify self-perceived characteristics of interest to student personnel professionals. The use of developmental vectors, from a viewpoint of self-perception, was chosen in that it would both add to and further explicate earlier research findings linking persistence to academic skills, career decision making, clinical psychological characteristics, and institutional climate.

DESIGN

Population and Sample

Those students comprising the first time freshman class of the Fall, 1979, semester who subsequently enrolled in a departmental orientation class or an interdisciplinary orientation section for students not initially choosing a major were used as the population for this study. One of these orientation sections is required of all entering students. A representative sample of one-half of these sections was chosen after a request for participation was circulated to the section instructors. A check was made to insure that the participating sections represented a cross section of the distribution of students in the various departments. The participation of an individual section of students was based upon the instructor's willingness to be a part of the study; therefore the sample was not totally random. Data analysis did not reveal significant bias as a result of this, however.

Within each section, students were asked to volunteer for participation. Again, this reduced the randomness of the sample. However, ethical considerations precluded mandatory participation. As a result of this,

a sample of 592 students emerged for the initial data collection. This represented fifty-four per cent of the freshman class enrolled in orientation classes.

Instrumentation

The STUDENT DEVELOPMENT TASK INVENTORY (Miller, Prince, Winston, 1975) was used to gather data concerning student perceptions of developmental needs facing them in their collegiate experience. The instrument is based upon Chickering's (1969) investigation of developmental tasks associated with experiences in higher education. Three major task areas are identified by the instrument, each with associated subtasks.

Task Area	Subtasks
1. Developing Autonomy	A. Emotional Autonomy B. Instrumental Autonomy C. Interdependence
2. Developing Mature Interpersonal relationships	A. Tolerance B. Mature Peer Relationships C. Opposite Sex Relationships
3. Developing Purpose	A. Educational Plans B. Mature Career Plans C. Mature Life Style Plans

The preceding outline was developed from a summary of the test scales for the SDTP (Miller et al 1975).

Methodology

The students comprising the sample were requested to complete the SDTI during the ninth week of the Fall, 1979, semester. Participation was voluntary, with each student completing an informed consent release. The students were then tracked through two semesters of enrollment. A period of three semesters was allowed to elapse so that a maximum number of students would provide retention and GPA data. At the end of the Fall, 1980, semester, data collection was begun concerning the students' progress.

Hypotheses

Two major hypotheses were tested, both at the .05 level for significance. First, a hypothesis that there would be no significant sex differences in performance on the scales of the ~~SDTI~~ was tested. The second hypothesis involved retention and grade point average and consisted of three sub-hypotheses. First, that there would be no sex differences noted in retention or GPA performance based up predictions from the SDTI; second, that there would be no significant prediction of retention by the scales of the SDTI; third, that there would be no significant prediction

of GPA performance by the SDTI. The latter two hypotheses involved the entire sample, regardless of sex.

Data Analysis

Usable returns were obtained for the SDTI from the 592 students in the participating sections of orientation classes. Representation was achieved from each of the six colleges of the university. Initial data analysis consisted of the computation of descriptive statistics concerning student responses on the nine scales of the STUDENT DEVELOPMENTAL TASK INVENTORY. Subsequent analysis involved multiple regression of the nine scales of the SDTI against retention (a variable coded "1" or "0") and GPA at the end of the completion of two semesters of successful enrolment.

The first data analysis consisted of the computation of means and standard deviations for all participants in the study. These data were analyzed for sex difference using a t-test for unrelated samples. In examining the following summary table, the reader should keep in mind that the scoring algorithm used on the SDTI for this study connotes higher perceived development to higher subscale scores. The highest subscale score is 20.

TABLE 1

RESULTS FOR ALL PARTICIPANTS

Scale	Mean (Standard Deviation)		
	All Students N=592	Male N=251	Female N=346
Emotional Autonomy* (X1)	13.18 2.68	13.56 2.66	12.90 2.58
Instrumental Autonomy** (X2)	14.31 2.95	14.79 2.81	13.96 3.01
Interdependence (X3)	14.32 2.62	14.17 2.76	14.44 2.51
Tolerance** (X4)	14.81 2.64	14.07 2.97	15.35 2.20
Mature Peer Relationships** (X5)	16.53 2.42	16.00 2.71	16.92 2.11
Opp. Sex Relationships** (X6)	16.10 2.97	15.51 3.17	16.45 2.76
Educational Plans (X7)	13.89 3.49	13.75 3.68	13.99 3.35
Career Plans* (X8)	13.41 4.20	13.83 4.22	13.11 4.16
Life Plans* (X9)	15.01 2.86	14.66 3.04	15.28 2.78

Subscripted "X" variables will be used to represent the SDTI scales in the regression equations to follow.

* $p < .05$ for a t-test of male-female differences

** $p < .01$ for a t-test of male-female differences

As can be seen from Table 1, the following scales exhibited sex differences significant at the .01 level:

1. Instrumental Autonomy
2. Tolerance
3. Opposite Sex Relationships.

The following scales exhibited sex differences significant at the .05 level:

1. Emotional Autonomy
2. Career Plans
3. Life Plans.

The first major hypothesis, that there would be no significant sex differences in the descriptive statistics, can therefore be rejected with the aforementioned scales having been found to provide significant contribution at the .05 level or better.

Within the research population, women view themselves as less mature in terms of emotional and instrumental (behavioral) autonomy. However, women viewed themselves as more mature in terms of capacity to develop intimate interpersonal relationships. Men perceived themselves as having more definite career plans; however women indicated higher perceived development in terms of long range, overall life planning. The variability in the results for the educational planning, career planning, and life planning scales was among the highest on the

instrument. Major differences between individuals of the same sex as well as between individuals of differing sex exist along these dimensions.

The data failed, however, to yield significant differences along sex based variables insofar as association of the SDTI scales, sex of the student, and retention and GPA were concerned. The hypothesis that there would be no sex based differences along this dimension is therefore accepted.

As previously mentioned, the analysis of the data included an examination of the relationship between the nine scales of the SDTI as independent variables and GPA as the dependent variable. The regression analysis also included the use of retention after completion of two full semesters as a dependent variable. To satisfy this latter criterion, a student would have had to enroll for a third semester. Of the 592 students in the original group, 405 met this latter criterion. GPA data were the cumulative GPA's earned by the 405 students meeting the criteria for retention, that is continuation for a third semester. Retention was coded as either a "1" or a "0" for retained or non-retained. All 592 students were included in this regression. No sex based differentiation was noted in the regression analysis;

the hypothesis relating to sex based retention and GPA performance was accepted.

The following regression investigates the two latter hypotheses in which the sample was considered as one group, with no sex differentiation.

Regression Data

SDTI as a predictor of GPA

Regression Equation

$$Y = 0.018(X1) - 0.019(X2) - 0.026(X3) - 0.006(X4) - 0.003(X5) - 0.018(X6) + 0.026(X7) - 0.039(X8) + 0.088(X9) + 2.14$$

Multiple R = .28

R-Square = .08

F = 3.73

p < .01

Important independent variables identified in stepwise regression.

Scale	F
1. Life Plans	6.68
2. Instrumental Autonomy	6.56
3. Career Plans	5.16
4. Peer Relationships	4.10

P < .05 for contribution of listed independent variables to the overall regression.

SDTI as a predictor of retention (binary variable)

Regression Equation

$$Y = 0.0003(X1) - 0.0081(X2) + 0.0013(X3) - 0.019(X4) - 0.0042(X5) - 0.0011(X6) + 0.033(X8) - 0.025(X8) + 0.017(X9) + 0.77$$

Multiple R = .20

R-Square = .04

F = 2.74

p < .01

Stepwise regression identified the following

independent variables as being important to this regression.

Scale	F
1. Career Plans	7.83
2. Tolerance	7.11
3. Life Plans	5.86
4. Educational Plans	3.84

$P < .05$ for significant contribution to the regression by each of the preceding independent variables. Extraction was terminated when p exceeded .05 for non-chance contribution.

The regression analyses yielded statistically significant results for both dependent variables, GPA and retention. The two sub-hypotheses dealing with overall retention and GPA performance can therefore be rejected. However, the amount of variance in the dependent variables accounted for by the regression model was quite low. This would suggest that for individual prediction, the regression models yield limited information. For the purposes of group prediction or program evaluation, the results provide more useful information. Independent variables (SDTI scales) contributing most to the prediction of GPA were the scales assessing life plans, career plans, and peer relationships. Independent variables (SDTI) with the most contribution to the prediction of retention were scales assessing educational plans, career plans, tolerance, and life plans. These are listed in descending order of magnitude of contribution to the two regressions.

CONCLUSIONS

The results suggest that there are differences of some significance in the way in which male and female students in the research population view their relative maturity on a number of vectors. It is also of interest to note that several of the scales which exhibited sex differences on the SDTI were also good predictors of GPA, retention, or both. The results, however, failed to directly link sex differences with prediction of GPA and retention variables. The results are consistent with other research relating persistence with adequacy of advising, presumably a method of meeting developmental needs in the areas of career and life planning. The students in the sample presented perceived needs in these areas; subsequent retention analysis revealed contribution of these variables to retention.

Many other factors also affect both retention and GPA, as evidenced by the low R-Square values; however, significant contributions occur to group behavior from differences on the SDTI scales. As with other research in the area of retention, the current study is of value as a tool to predict group behavior. The results of this study highlight previous findings which related retention to goal setting and

advisement, part of the career planning process. While no individual set of predictors account for a substantial percentage of variance noted in retention, a body of data is emerging that suggests that retention and attrition behaviors are predictable for groups. Institutional policies supporting student services in the areas of academic advisement and career planning are likely candidates for program decisions having substantial influence on this significant problem confronting higher education.

RECOMMENDATIONS

Clearly, further research, particularly of a longitudinal nature, should be performed to isolate and refine variables relating to retention. The differences in behavior along this dimension between students initially declaring a major and those choosing to postpone this decision should be scrutinized. In particular, research designs that would critically scrutinize the influence of programs addressing the variables found to be related to retention in this and other studies, specifically career planning and advisement activities, is necessary.

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